2. (Original) The coating composition of Claim 1, wherein the mixture comprises a mixture of beeswax and paraffins.

3. (Original) The coating composition of Claim 2, wherein the paraffins comprise primarily aliphatic hydrocarbons having chain lengths in the range from about 18 to about 36 carbon atoms.

4. (Original) The coating composition of Claim 1, wherein the metal comprises aluminum.

5. (Original) The coating composition of Claim 1, wherein the metal oxide comprises titanium oxide or aluminum oxide.

6. (Original) The coating composition of Claim 2, wherein the metal comprises aluminum.

7. (Original) The coating composition of Claim 2, wherein the metal oxide comprises titanium oxide or aluminum oxide.

8. (Original) The coating composition of Claim 1, wherein the mixture, before addition of powdered metal or metal oxide, has a melting point in the range of about 120° to 250°F.

9. (Original) The coating composition of Claim 1, wherein, the composition cools to ambient temperature substantially free of occlusion of gas bubbles.

10. (Original) The coating composition of Claim 1, wherein the composition is a solid at temperatures in the range below about 120°F, and liquefies upon heating to a temperature in the range from about 140° to about 180°F.

11. (Original) The coating composition of Claim 1, wherein the powdered metal or metal oxide or metal carbide comprises a sufficient amount to permit uniform heating of a mass of the composition, and to provide such internal compression of a mass of the composition upon cooling as to substantially exclude occluded gasses from a cooled mass.

12. (Original) The coating composition of Claim 1, wherein the amount of powdered metal or metal oxide or metal carbide comprises from about 5 to about 15 wt. %, based on the weight of the mixture of paraffin and beeswax.

13. (Original) The coating composition of Claim 1, wherein when coated onto a composite material subject to residual moisture loss, the composition reduces moisture loss by from about 60 to about 100% as compared to an uncoated composite.

14. (Currently Amended) A coating composition for substantially preventing development of cracks in a cured composite, the composite otherwise prone to moisture loss under environmental conditions to which it is exposed, the composition comprising:

a) a mixture of esters of fatty acids and aliphatic hydrocarbons having a softening point in the range from about 120° to about 180° F; and

b) a powdered additive in sufficient amount to permit uniform heating of a mass of the composition and to provide compression of a mass of the composition upon cooling sufficient to substantially exclude occluded gasses from a cooled mass;

wherein the composition comprises a waxy solid at room temperature, wherein heating is not needed to render homogeneous a coating of the composition as applied to a composite, and wherein the composite to be coated comprises residual moisture resulting from cure of a polymer of the composite.

15. (Original) The coating composition of Claim14, wherein the mixture comprises paraffins and waxes, the paraffins primarily having a chain length of from about 18 to about 36 carbon atoms.

16. (Original) The coating composition of Claim 14, wherein the powdered additive is selected from the group consisting of powdered metals, metal carbides and metal oxides.

17. (Original) The coating composition of Claim 15, wherein the powdered additive comprises powdered aluminum comprising particulates in the range from about 25 to about 60 microns.

18. (Original) The coating composition of Claim 16, wherein the powdered additive is selected from aluminum and titanium oxide.

19. (Original) The coating composition of Claim 14, the composition comprising a solid at ambient temperatures in the range below about 120°F.

20. (Original)The coating composition of Claim 14, wherein when coated onto a composite material subject to moisture absorption under ambient conditions of temperature and humidity, the composition reduces moisture absorption by from about 60 to about 100%.

Response

Applicants appreciate the Examiner's careful review of the prior art and the application. As understood, the pending 20 original claims stand rejected as follows:

1. Claims 1-3, 8-16, 19 and 20 as anticipated under 35 USC 102(b) due to the Annan patent;
2. Claims 4-7, 17 and 18 under 35 USC 103(a) as obvious due to the Annan patent in view of the Davidian patent;

3. Claims 1-20 provisionally rejected due to claims 1-21 of copending application 10/766,702 under the prohibition against double patenting; and
4. Claims 1-7, 9 and 11-13 under the prohibition against double patenting (of the obviousness-type), based on claims 1-7, 9 12-14 of copending application 10/766,702.
5. Claims 8, 10, and 14-20 are rejected under the prohibition against double patenting (of the obviousness-type), based on claims 8, 10 and 15-21 of copending application 10/766,702.

The Prior Art

The prior art cited comprises two references:

A. Annan

The Annan patent issued in 1920 and relates to a wax composition used in sealing stone or concrete floors. Annan teaches "a new composition of matter" consisting of "combining mineral, vegetable and animal waxes with or without coloring matter such as soluble oil dyes or stains or chromic oxid . . ." Col. 1 lines 35-42. In column 2 of the patent, two examples of the composition are set forth. None contain particulates such as powdered metal, metal oxide or metal carbide. The patent teaches that the composition must be heated to about 212F to melt it before being applied, and the porous stone or concrete surface to which it is applied must be heated to about 300F so that the heated mixture can penetrate to about ½ inch below the surface.

B. Davidian

This patent relates to a protective coating for metals that is a flowable mixture of wax particulates with melting point 120-350 F, that also contains finely divided inert filler and/or anti-corrosion agents. Importantly, it is NOT a waxy solid with powder dispersed throughout. It is a dispersion of finely divided wax particles in oil. Specifically, the patent states at col. 1, lines 50-63:

> **The invention is directed to a protective coating composition for metal articles which is based on the novel concept that a dispersion of finely divided wax particles in oil will solidify to form a solid, tough, adherent coating when heated to a temperature above the melting point of the wax. In general, the coating composition consists of 10% to 90% by weight of finely divided wax particles having a melting point in the range of 120° to 350° F., and a particle size in the range of 0.5 to 400 microns, and 10% to 90% of a liquid oil.**
>
> **The composition can also contain up to 60% by weight of finely divided particles of an inert filler, and up to 60% by weight of finely divided particles of an anti-corrosive agent.**

The coating is exemplified as applied to metals, in Example 2. The coating is stated throughout the patent as being one that prevents corrosion by protecting the metal surface. There is no teaching or suggestion to apply it to a porous composite surface subject to loss of moisture, such as for example residual moisture from a cure reaction. Metals unlike composites do not have such moisture, and unlike composites, metals do not lose physical properties (crack development, for example) upon losing moisture.

Anticipation (102(b)) of Claims 1-3, 8-16, 19, 20

Applicants respectfully submit that these Claims as filed, and as now amended, are not anticipated by Annan because the MPEP states that each and every element (or "limitation") of the claim must be found in the prior art reference for anticipation. See MPEP 2131:

> "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). >"When a claim covers several

The claims each require as a recited element that there is a "powdered metal, metal oxide or metal carbide dispersed throughout the mixture". This not referenced anywhere in Annan. Annan speaks to waxes and soluble dyes but does not mention particulates of any kind. This is not surprising since his composition is intended to penetrate into the pores of stone or concrete and particulates may not penetrate these pores but remain as a gritty surface contaminant. See, for example the last line in column 2 to end of column 3

describing how the floor and composition are both heated up to facilitate penetration of the wax mixture into the top ½ inch of the floor surface. The Examiner conceded in his 35 USC 103 rejection of other claims that Annan does not teach the dispersed powder, and so the Examiner relied on Davidian for that teaching. In view of the foregoing, Applicant respectfully requests withdrawal of the grounds for rejection.

Obviousness Claims 4-7, 17, 18

The Office action cites Annan in view of Davidian for teaching or suggesting the dispersed metal powder not shown in Annan by itself. In order to combine the references an expectation of success must found in the references themselves. MPEP 2143:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.
>
> The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Here, however, one reference deals with a stone/concrete floor sealant, and the other with an anti-corrosion coating for metals. These are in different art areas and cannot reasonably be combined. If the Examiner is relying upon the level of skill in the art to combine the references, then Applicants point out that such is not permitted under MPEP 2144:

> "There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

Looking at the two other criteria of the three given in MPEP 2144, quoted above, for combining references, there is no explicit teaching here to combine Annan and Davidian in either of the references. That cannot be disputed. As to the "nature of the problem to be solved", Davidian solves a different problem. He looks at improving corrosion resistance of metals, and not at floor sealing to prevent disintegration of the floor. Neither of the patents deals with moisture loss from composite materials and the loss of physical integrity (cracking) associated with such loss. Accordingly, the combination, relating to corrosion of metals and flooring, is inappropriate as a reference that a person of skill in the art might turn to resolve an unrelated problem in the composite technical field. The art is not at all analogous.

Nonetheless, without waiving this position, Applicant will distinguish Davidian, as Annan is already adequately distinguished, above, for lacking at least the powdered component of the invention.

While Davidian shows a wax combination with a powdered additive, the patent requires mixing oil and the wax at room temperature, to provide a dispersion. The dispersion is applied to the metal article to be protected, and heated to above the wax melting point to form a coating. Then, upon cooling, the coating will solidify "almost instantaneously" to form an adherent coating on the metal surface. See Column 3 lines 29-40:

> **In preparing the coating composition of the invention, the finely divided wax particles are mixed with the oil at room temperature to provide a dispersion. The dispersion is then applied to the article to be protected, and heated to a temperature above the melting point of the wax, generally in the range of 150° to 400° F., and preferably in the range of 180° to 250° F., to provide a homogeneous liquid coating. The heated liquid will solidify virtually instantaneously when cooled to ambient temperature to provide a solid adherent, homogeneous, corrosion resistant coating on the article.**

Accordingly, the Davidian composition *must be heated after application to the surface to above the wax melting point to permit the wax to dissolve in the oil and form a homogeneous coating.* Prior to such heating of the coated metal, the wax is merely dispersed in the oil-wax mixture.

In the invention, the heating step of Davidian after application of the coating to the composite is not necessary at all. The amended claims now make that clear, and the invention as exemplified in the Examples, make that clear. Once the molten composition of the claimed invention is applied to the substrate subject to moisture loss, no further heating is needed: it forms a barrier to moisture loss on the surface upon cooling and solidifying.

This is an important distinction because it is not practical or possible to apply heat to certain composite substrates to melt wax as in Davidian. Indeed, heating may cause product damage and is therefore undesirable. Further, applying heat often raises safety issues both as to personnel, and as to risk of fire because waxes are flammable.

Nowhere does Davidian teach or suggest dispensing with the post-application heating step. It is clearly necessary in his coating because his composition is not homogeneous prior to heating; it is merely a dispersion of wax particles in oil at room temperature. In the claimed invention, the composition is a waxy solid at room temperature. Further, the composition is not applied to metals but to porous substrates, some of which are exemplified in the application, but of course the composition is also useful in other porous substrates subject to moisture loss.

In view of the foregoing, Applicants respectfully request withdrawal of the basis for rejection, and allowance of Claims 4-7, 17, and 18.

Pending Claims

The claims have been amended as shown above and in the attached clean copy of the Claims.

As can be seen, the independent claims 1 and 1 have been amended.

Claim 1 is in product by process form, as permitted under the rules. In the process of production, waxes and paraffins are heated together and blended under heat. The powder is dispersed within the blend. Upon cooling, the product at room temperatures (typically, about 15-25 Celsius) is a waxy solid. This feature is not shown in any prior art reference cited. Referring to the Examples, the coating of the composition does not require heating after application to a substrate's surface to make it homogeneous, as in the case of the Davidian prior art, nor does the substrate have to be heated, as required in the Annan prior art. Further, the substrates are porous and subject to moisture loss (water or water vapor) and this feature is not shown in Davidian or Annan. The "wherein" clauses, appropriate in the chemical arts, recite composition properties that help to distinguish over the prior art. Claims 2-13 depend from Claim 1.

Claim 14 relates to a coating composition for coating composites to substantially preventing cracking of composites caused by moisture loss. The composition requires that the added powder be sufficient to act to permit uniform heating of the mass and to exclude gasses when the mixture is cooled and solidifies. This is not shown in any prior art cited. The coating of the composition requires no post-application heating to make it homogeneous, as in the case of Davidian. The "wherein" clauses, appropriate in the chemical arts, recite composition properties that help to distinguish over the prior art. Claims 15-20 depend from Claim 14.

Accordingly, applicants respectfully submit that all the claims as presented are patentable.

Double Patenting Provisional rejections

Applicant points out that the claims in the copending applications are neither the same nor obvious in view of each other: A major and specific difference is that while the compositions of this application prevent moisture loss, those of 10/766,702 relate to a

composition that prevents moisture incursion into substrates. A position that preventing moisture incursion is the same as preventing moisture loss, and that if a composition does one, it can also necessarily perform the other function, is mistaken. For example, skin moisturizers prevent moisture loss from skin, but are formulated to not provide a barrier, or not to prevent, moisture from migrating into the skin, through the moisturizer composition coating on the skin. It does not necessarily follow then that a composition that prevents moisture loss also necessarily prevents moisture in-migration through the composition. Such interchangeability or duality of function is not obvious. Much depends upon the chemistry of the composition, and the Patent Office's decisions recognize that chemistry is not a predictable art. Since the grounds for double patenting rejection are only provisional at this point, applicant reserves the right to respond further, in the event the Examiner does not reconsider and withdraw this basis for claim rejection. Applicant believes that the claims as presented are clearly distinct in one application from those in the other application.

Explanation of Claim Amendments

For the record, the claim amendments were not made to overcome the prior art. Applicant believes that the claims as presented were patentable over the cited art. The amendments were made to recite inherent properties of the compositions to permit more ready determination of whether other compositions fall within the scope of these claims.

Respectfully submitted,

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The above signature hereby certifies that this document and its attachments were faxed to Examiner David M. Brunsman at facsimile number 703 872 9306 on September 8, 2005.

CLAIMS

1. (Currently Amended) A coating composition for substantially preventing moisture loss from a cured composite coated with the composition, the coating composition prepared by a process comprising:

heating and blending a mixture comprising waxes and paraffins and dispersing a powdered metal, metal oxide, or metal carbide throughout the mixture; and

cooling the mixture to form a waxy solid with powdered metal, metal oxide or carbide dispersed therein;

wherein the waxy solid is substantially free of entrained gasses, wherein heating is not needed to render homogeneous a coating of the composition as applied to a composite, wherein the coating reduces moisture loss from the composite coated therewith, and wherein the composite comprises residual moisture produced by a cure reaction.

2. (Original) The coating composition of Claim 1, wherein the mixture comprises a mixture of beeswax and paraffins.

3. (Original) The coating composition of Claim 2, wherein the paraffins comprise primarily aliphatic hydrocarbons having chain lengths in the range from about 18 to about 36 carbon atoms.

4. (Original) The coating composition of Claim 1, wherein the metal comprises aluminum.

5. (Original) The coating composition of Claim 1, wherein the metal oxide comprises titanium oxide or aluminum oxide.

6. (Original) The coating composition of Claim 2, wherein the metal comprises aluminum.

7. (Original) The coating composition of Claim 2, wherein the metal oxide comprises titanium oxide or aluminum oxide.

8. (Original) The coating composition of Claim 1, wherein the mixture, before addition of powdered metal or metal oxide, has a melting point in the range of about 120° to 250°F.

9. (Original) The coating composition of Claim 1, wherein, the composition cools to ambient temperature substantially free of occlusion of gas bubbles.

10. (Original) The coating composition of Claim 1, wherein the composition is a solid at temperatures in the range below about 120°F, and liquefies upon heating to a temperature in the range from about 140° to about 180°F.

11. (Original) The coating composition of Claim 1, wherein the powdered metal or metal oxide or metal carbide comprises a sufficient amount to permit uniform heating of a mass of the composition, and to provide such internal compression of a mass of the composition upon cooling as to substantially exclude occluded gasses from a cooled mass.

12. (Original) The coating composition of Claim 1, wherein the amount of powdered metal or metal oxide or metal carbide comprises from about 5 to about 15 wt. %, based on the weight of the mixture of paraffin and beeswax.

13. (Original) The coating composition of Claim 1, wherein when coated onto a composite material subject to residual moisture loss, the composition reduces moisture loss by from about 60 to about 100% as compared to an uncoated composite.

14. (Currently Amended) A coating composition for substantially preventing development of cracks in a cured composite, the composite otherwise prone to moisture loss under environmental conditions to which it is exposed, the composition comprising:

c) a mixture of esters of fatty acids and aliphatic hydrocarbons having a softening point in the range from about 120° to about 180° F; and

d) a powdered additive in sufficient amount to permit uniform heating of a mass of the composition and to provide compression of a mass of the composition upon cooling sufficient to substantially exclude occluded gasses from a cooled mass;

wherein the composition comprises a waxy solid at room temperature and wherein the composite to be coated comprises residual moisture resulting from cure of a polymer of the composite.

15. (Original) The coating composition of Claim14, wherein the mixture comprises paraffins and waxes, the paraffins primarily having a chain length of from about 18 to about 36 carbon atoms.

16. (Original) The coating composition of Claim 14, wherein the powdered additive is selected from the group consisting of powdered metals, metal carbides and metal oxides.

17. (Original) The coating composition of Claim 15, wherein the powdered additive comprises powdered aluminum comprising particulates in the range from about 25 to about 60 microns.

18. (Original) The coating composition of Claim 16, wherein the powdered additive is selected from aluminum and titanium oxide.

19. (Original) The coating composition of Claim 14, the composition comprising a solid at ambient temperatures in the range below about 120°F.

20. (Original)The coating composition of Claim 14, wherein when coated onto a composite material subject to moisture absorption under ambient conditions of temperature and humidity, the composition reduces moisture absorption by from about 60 to about 100%.